

**Listing of Claims:**

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (previously presented) A method of detecting Parkinson's disease (PD) through operating a magnetic resonance imaging (MRI) apparatus performing MRI of brain tissue that includes substantia nigra pars compacta (SNc) tissue comprising:

obtaining a gray matter suppressed (GMS) MRI signal of brain tissue that includes said SNc tissue by operating said MRI apparatus;

obtaining a white matter suppressed (WMS) MRI signal of brain tissue that includes said SNc tissue by operating said MRI apparatus;

processing information from said GMS and WMS MRI signals to produce and present resultant signals indicative of PD by computer-processing; and

including forming and displaying, by computer processing, GMS and WMS images using information from said GMS and WMS signals.

2. (original) A method as in claim 1 in which said obtaining of each of the GMS and WMS MRI signals comprises using an inversion recovery (IR) pulse sequence.

3. (previously presented) A method as in claim 2 wherein said processing of information from said GMS and WMS signals comprises processing at least portions of said GMS and WMS images.

4. (previously presented) A method as in claim 3 in which said processing of information from said GMS and WMS signals comprises obtaining a ratio image of at least portions of said GMS and WMS images for at least one MRI slice.

5. (previously presented) A method as in claim 4 further comprising processing selected medial and lateral regions of interest in each ratio image to derive a numerical measure indicative of the presence and/or staging of PD.

6. (original) A method as in claim 1 further including using the resultant signals to stage PD.

7. (original) A method as in claim 1 including plotting the resultant signals in a two-dimensional plot in which markers for patients with PD appear in an area different from that for patient without PD.

8. (previously presented) A method as in claim 7 in which the markers for patient with PD appear in different areas of the plot corresponding to different stages of PD.

9. (previously presented) A method as in claim 1 including causing said resultant signals to be indicative of a relative loss of MRI signal from lateral as compared with medial portions of the SNc.

10. (previously presented) A method of detecting Progressive Supranuclear Palsy (PSP) through operating a magnetic resonance imaging (MRI) apparatus performing MRI of brain tissue that includes substantia nigra pars compacta (SNc) tissue comprising:

obtaining a gray matter suppressed (GMS) MRI signal of brain tissue that includes said SNc tissue by operating said MRI apparatus;

obtaining a white matter suppressed (WMS) MRI signal of brain tissue that includes said SNc tissue by operating said MRI apparatus;

processing information from said GMS and WMS MRI signals to produce and present resultant signals indicative of PSP by computer-processing; and

including forming and displaying, by computer processing, GMS and WMS images using information from said GMS and WMS signals.

11. (previously presented) A method as in claim 10 including causing said resultant signals to be indicative of a relative loss of MRI signal from medial as compared with lateral portions of the SNc.

12. (previously presented) A method of distinguishing between two forms of parkinsonism radiographically, Parkinson's disease (PD) and Progressive Supranuclear Palsy (PSP) through operating a magnetic resonance imaging (MRI) apparatus performing MRI of brain tissue that includes substantia nigra pars compacta (SNc) tissue comprising:

obtaining at least two starting MRI images of brain tissue that includes said SNc tissue using different MRI parameters by operating said MRI apparatus; and

computer-processing the starting images to compute and present resultant signals differentiating between PD and PSP and displaying results of said computer-processing on display equipment.

13. (previously presented) A method as in claim 12 in which the at least two starting images comprise a gray matter suppressed (GMS) MRI image and a white matter suppressed (WMS) MRI image of brain tissue that includes said SNc tissue in the same MRI slice.

14. (original) A method as in claim 13 in which each of said GMS and WMS image is obtained using an inversion-recovery MRI pulse sequence.

15. (previously presented) A method of detecting Progressive Supranuclear Palsy (PSP) through operating a magnetic resonance imaging (MRI) apparatus performing MRI of brain tissue that includes substantia nigra pars compacta (SNc) tissue comprising:

obtaining at least two starting MRI images of brain tissue that includes said SNc tissue using different MRI parameters by operating said MRI apparatus; and

computer-processing the starting images and computing and presenting resultant signals indicative of and identifying PSP and displaying results of said computer-processing on display equipment .

16. (previously presented) A method as in claim 15 in which the at least two starting images comprise a gray matter suppressed (GMS) MRI image and a white matter suppressed (WMS) MRI image of brain tissue that includes said SNc tissue in the same MRI slice.

17. (previously presented) A method as in claim 16 in which each of said GMS and WMS images is obtained using an inversion-recovery MRI pulse sequence.